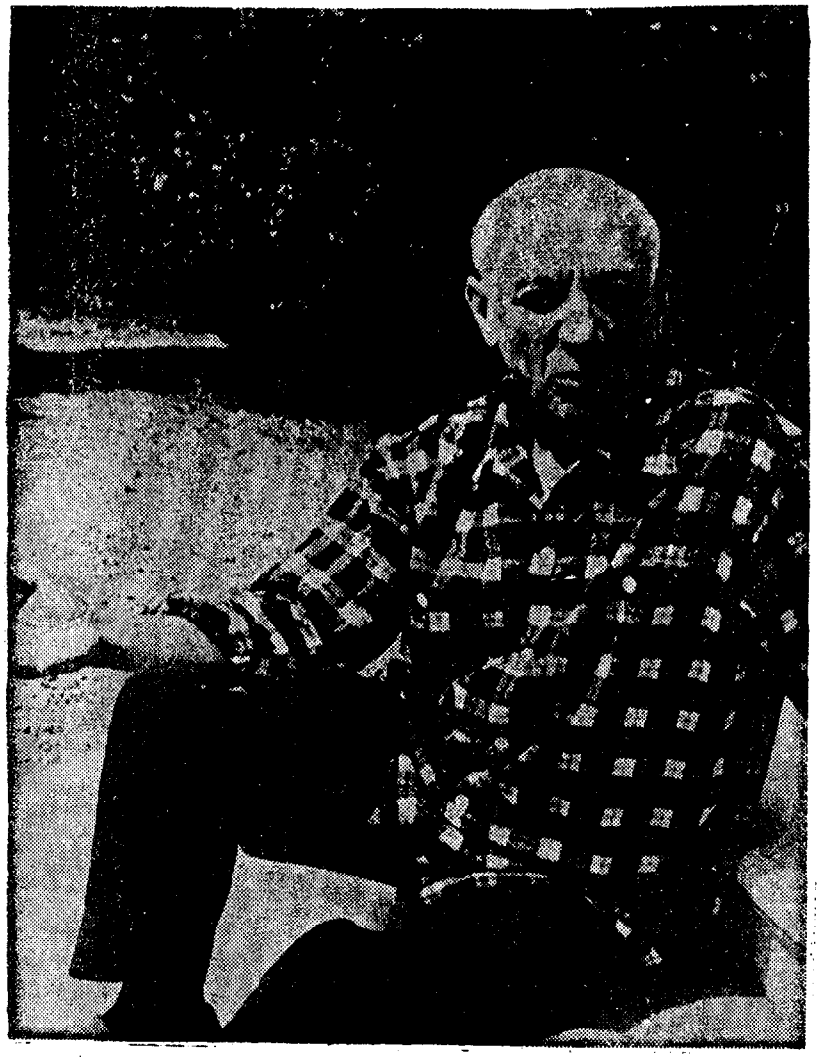
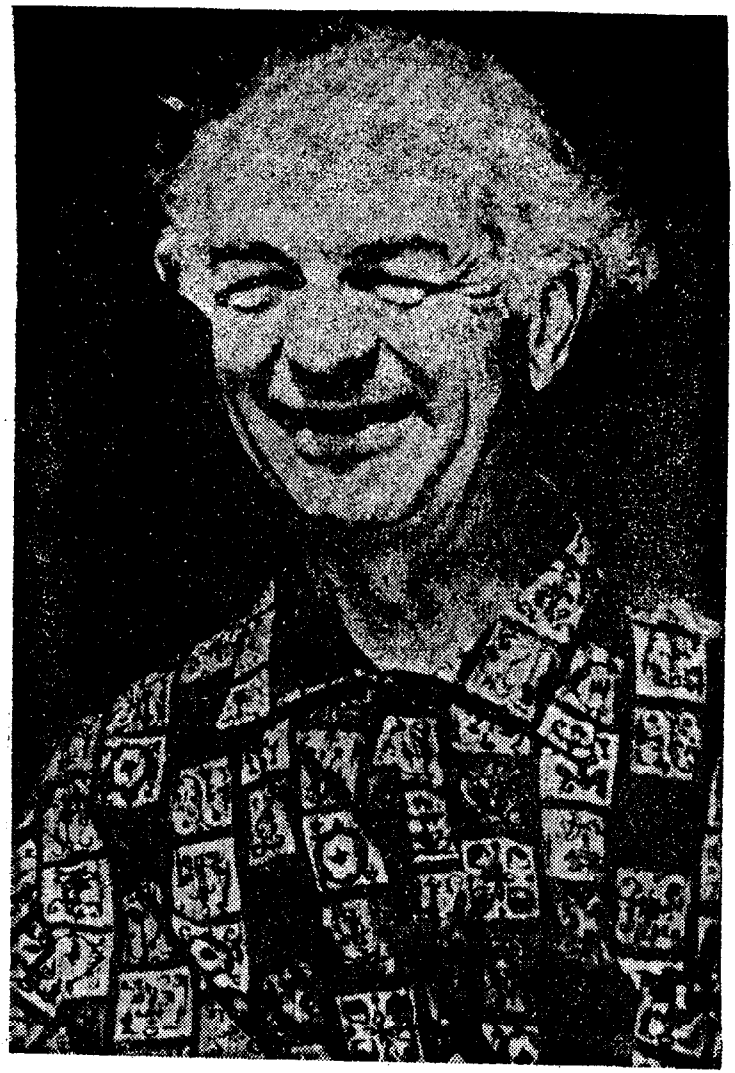


Pablo Picasso (left) and Linus Pauling, the one an artist, the other a scientist, work with different materials and express themselves in different ways. But their similarities are more essential than their differences: they are both humanists.



story by
marvin bank

science and humanism—friends or foes?

The picture, or rather caricature, of the United States in some parts of the world is that of an omniscient giant carrying an atom bomb in one hand and a bottle of Coca-Cola in the other.

But that picture is much oversimplified and very limited in scope. If we take Coca-Cola and the bomb to be symbols of the useless and destructive products of a technological, inhumane civilization, we can understand that the image of the United States among certain groups of people is not a pleasant one. Among these people are some American intellectuals who decry the effect of science and technology and who would like to return to a pre-industrial civilization where the noble savage was happy and healthy in his unpolluted wilderness. This is impossible; we cannot turn back the clock. And most of us would probably not wish to give up all the advantages of modern science.

However, there is a completely different picture of the United States, one which I think is more essential. Science, and often technology, are humane and humanistic endeavors and it is necessary to emphasize that the gap between science and humanism there is not as wide nor as deep as many critics of our society suppose. It is my belief that science aids not only the citizens of the U.S. but also the citizens of the world.

Historically speaking, many American humanists have seen the importance of science and technology. Walt Whitman wrote in praise of the locomotive. Emerson, the essayist and philosopher, said that a steamship sailing between America and Europe might be as beautiful as a star. Thoreau compared the sounds of a telegraph wire to the wind in the pine needles. These were discoveries that added new and significant elements to our culture and the humanists absorbed them as a part of life as a whole.

Albert Einstein, German-born American citizen, always worked for what he felt was the good of mankind. Leo Szilard, Hungarian-born American, Nobel prize winner, and great scientist, was in the forefront of the humane activities for peace, and devoted the last years of his life to such activities.

Isidor Isaac Rabi, Nobel prize winner in physics in 1944, is a professor at Columbia University, where a new kind of professorship has been set up. Those appointed may work in whatever field they consider most fruitful, cutting across departmental barriers. Professor Rabi wants to bring science and other cultural activities closer together, aiding them to interpenetrate one another and enrich both. He would like to teach science humanistically in relation to society, philosophy, and religion. He wants to emphasize the humaneness of scientists.

Another outstanding American scientist, Linus Pauling, twice Nobel prize winner, once in chemistry in 1954 and again in peace in 1962, whose activities, perhaps unappreciated by some of his fellow citizens, have always been human.

He has always been in favor of increasing the benefits of science to mankind, and protecting them from the evil effects of technology. Creative minds both in science and the humanities in the U.S. have always understood the humane values of science.

There are many aspects of American life in which science and technology merge with the arts. The architect Sullivan designed the first structural steel office building in St. Louis, Missouri, which is considered a blend of art and engineering. Architect Buckminster Fuller developed the geodesic dome, in which beauty and function merge. The design of functional household utensils according to artistic norms is an important American technological attitude. And few people would deny the smooth beauty of aircraft designed in the States. The physical environment in the U. S. has been slowly changed by scientific and technological developments, but now art and humanism are having their influence.

The United States has large scientific institutions which are devoted not only to research, but also to contemplative scientific thought. The Salk Institute invites welk-known scientists to devote themselves to any activity they wish and especially to contemplate the effects of science on our environment. The Princeton Center for Advanced Studies is a protected and quiet place for all intellectuals to do research and to ponder the problems of the world, away from the pressures of modern life.

Both scientist and artist have expressed the same values. Guerica, Picasso's terror-ridden canvas of the Nazi bombardment of a helpless Spanish city, and Linus Pauling's mathematically accurate the description of the effects of a nuclear war, both express the horror of war. The clergymen who inveigh against smoking and the scientists who present facts and figures on the evil effects of tobacco are saying the same thing.

Science and humanism have much in common in other ways. In both science and the humanities, discoveries are made by intuition, by imagination, by a creative urge. Copernicus' revolutionary idea that the sun was the center of our solar system was intuitive, imaginative, creative. It was based on a feeling for simplicity and beauty. Both the sciences and the humanities often depend on an objective atiude; both deal with verifiable information.

The behavioural sciences study human activities in a scientific manner. It is no coincidence that sociology, political science, history, anthropology, and other disciplines have progressed so far in the States. There and in other parts of the industrialized world the methods of science and the attitudes of humanism have converged.

Science, as British scientist Jacob Bronowski insists, is based on the habit of truth. This is a humanistic concept; it is the basis of liberty and democracy and the rights of man. When it is broken or ignored, society becomes corrupt and tyrannical. So in a sense the scientific attitude is a guarantee of human rights.

Peter Abelard, a revolutionary in the Catholic Church, said, anticipating the Renaissance, "By doubting we are led to inquire and by inquiry we perceive the truth."

Einstein searched for this truth in physical laws, while the religious philosopher Teilhard de Chardin finds it in divine origin. Both men seek the same truth — but they reach it by different paths. And it is truth that holds a society together.

The habit of truth makes for independence and originality, two much-admired human qualities, and one often not so admired, but still profoundly human, dissent. Dissent is a supreme quality of the scientist and of the poet, and it is an important quality for any man.

Science, then, depends for its success not on rigid rules of technique nor on absolute methods of induction and deduction, but on the long admired qualities of human conduct—truth, independence, originality, dissent, freedom, tolerance, respect, and democracy. Actually, the scientific spirit has created the most humane values of which we know. The spirit of science is the spirit of modern, ethical democracy. And the value of science is not only in its technique, but more important, in its spirit.